AMENDMENT

In the Claims:

1. (Original) A digital television receiver comprising:

an antenna receiving channel signals of digital television broadcasting and having a directionality dependent on a control signal;

a signal processing part tuning a wanted channel signal from the channel signals and processing the tuned channel signal as a wanted form;

a detection part detecting state signals of the channel signal outputted from the signal processing part;

a memory, when every new state signal is detected, storing the detected new state signal sorted with previously-detected state signals;

a control part producing the control signal corresponding to an optimal direction of the antenna by comparing the new state signal to the previous state signals; and

an interface part providing the antenna with the control signal.

2. (Original) The digital television receiver of claim 1, wherein the antenna includes a smart antenna.

3. (Original) The digital television receiver of claim 1, the signal processing

part comprising:

a tuner tuning a wanted channel signal from channel signals received through the antenna;

an intermediate frequency automatic gain control part controlling automatically an intermediate frequency gain of the channel signal tuned by the tuner; and

a receive chip taking a signal having a wanted form from an output signal of the intermediate frequency automatic gain control part and providing the detection part with the taken signal.

4. (Original) The digital television receiver of claim 3, wherein the receive chip is a VSB receive chip for getting a VSB(vestigial side band) signal.

5. (Original) A digital television receiver comprising:

an antenna having a directionality according to a control signal;

a signal processing part making a digital television channel signal from the antenna have a signal of a predetermined form;

a detection part attaining state signals from an output signal of the signal processing part wherein the state signals include a power of the channel signal, a power of a ghost signal, and a signal vs. noise ratio;

a memory updating and storing the previously-detected state signals and the new state signal;

a direction controller attaining the control signal for controlling a direction of the antenna by comparing new state signals of the detection part to the previous state signals stored in the memory; and

an interface part connected between the antenna and the direction controller and providing the antenna with the control signal so as to control the direction of the antenna in accordance with the control signal.

6. (Original) The digital television receiver of claim 5, the signal of the predetermined form is a VSB signal.

7. (Original) The digital television receiver of claim 6, the signal processing part comprising:

a tuner tuning a wanted channel signal from channel signals received through the antenna;

an intermediate frequency automatic gain control part controlling automatically an intermediate frequency gain of the channel signal tuned by the tuner; and

a VSB receive chip taking a VSB signal from an output signal of the intermediate frequency automatic gain control part and providing the detection part with the VSB signal.

8. (Original) The digital television receiver of claim 7, the VSB receive chip comprising:

an automatic gain control part controlling a gain of an output signal of the intermediate frequency automatic gain control part;

a timing and carrier restoration part restoring a timing and carrier loss on an output signal of the automatic gain control part;

an equalizer equalizing an output signal of the timing and carrier restoration part;

a phase tracker tracking a phase of an output signal of the equalizer; and

a forward error corrector correcting a forward error on an output signal of the phase tracker and outputting the VSB signal.

9. (Original) The digital television receiver of claim 8, the detection part comprising:

a signal power detector a power of the tuned channel signal using an automatic gain control signal from the automatic gain control part of the VSB receive chip;

a ghost power detector detecting a power of a ghost signal using an output signal from the equalizer or an output signal of the timing and carrier restoration part of the VSB receive chip; and

a signal vs. noise ratio(SNR) calculator calculating a ratio between a

signal and a noise using an output signal of the phase tracker of the VSB receive chip.

10. (Original) The digital television receiver of claim 9, the ghost signal power detector comprising:

a data segment synchronization correlative calculating a correlation value between an I channel signal received from the VSB receive chip and a previously-set synchronization signal value(cf. a synchronization value "1001" is inserted into each data segment in a VSB transmission system);

a segment integrator accumulating output values of the data segment synchronization correlative in 832 delayers;

a slicer providing an increased count value when the accumulated correlation value reaches a predetermined size;

a confidence counter increasing a count number according to the increased count value; and

a maximum ghost power detection controller transferring a ghost power ready signal and a standardization value resulted from standardizing a maximum ghost power into a power of a received channel signal to the direction controller when a value of the confidence counter reaches a reference value.

11. (Original) The digital television receiver of claim 10, wherein, in the VSB transmission system, a synchronization signal inserted into each data segment is "1001".

12. (Original) The digital television receiver of claim 9, the signal vs. noise ratio calculator comprising:

a subtractor subtracting a demodulated signal constellation from a decision signal constellation;

a squarer squaring an output of the subtractor;

an accumulator accumulating output signals of the squarer;

a latch delaying an output of the accumulator; and

a divider dividing an output of the latch into a window size m of the segment integrator of the ghost signal power detector.

13. (Original) The digital television receiver of claim 12, wherein the signal vs. noise ratio is attained by the following algorithms: a signal vs. noise ratio SNR = 10log(Ps/Pn); and Pn?mse = sigma(k is 1 to n)(mse/m), where Ps is a signal power(=1), Pn is a noise power(Pn?mse), 'R_1' and 'D_1' are a demodulated signal constellation(received constellation) and a decided signal constellation(decision constellation), respectively, and 'm' designates a window size of the integrator.

14. (Original) The digital television receiver of claim 8, wherein an automatic gain control (AGC) system of the tuned channel signal controls a gain of an intermediate frequency signal through a electric charge pump & lag filter from the VSB receive chip and a gain of a high frequency signal automatically using an automatic gain control signal delayed in the intermediate frequency automatic gain control part.

15. (Original) The digital television receiver of claim 8, wherein the intermediate frequency signal and high frequency signal gains are controlled automatically by the VSB receive chip in accordance with an automatic gain control system.

16. (Original) The digital television receiver of claim 5, the direction controller comprising:

a signal power tracker tracking a power of the tuned channel signal using an output signal of the signal power detector;

a ghost power tracker tracking a power of the ghost signal using an output signal of the ghost power detector;

a signal vs. noise ratio (SNR) tracker tracking a ratio between a signal and a noise using an output of the signal vs. noise ratio calculator;

a tracking processor tracking states of the tuned channel signal using

output signals of the trackers in a presently-selected antenna pattern and then changing the antenna pattern in order stored in the memory if the tracked states fail to maintain effective value sizes;

a scan processor attaining an effective signal power and antenna pattern by varying the directionality of the antenna using an output signal of the tracking processor and then storing the power and pattern values in the memory; and

a sort processor aligning the stored antenna pattern values in order of the signal power values.

17. (Original) The digital television receiver of claim 16, wherein the direction controller makes the scan processor carry out the scanning again if it is judged that there is no antenna pattern having an effective size in the memory by the operation of the tracking processor.

18. (Original) The digital television receiver of claim 16, the direction controller further comprising general registers including a pointer register representing an address of the memory, a direction register Dir_reg. always storing the present antenna state value, an angle register storing temporarily a state value of the antenna, and a power register storing a power value of a received signal temporarily.

19. (Original) In a digital television receiver having an antenna of which direction is adjustable, an antenna controller, and a memory, a method of controlling an antenna of a digital television receiver comprising:

a step (a) of storing an effective power of the channel signal received through the antenna in the memory by rotating the direction of the antenna and selecting an antenna pattern when a maximum signal power is detected;

a step (b) of aligning the stored antenna patterns in order of sizes of the stored signal powers; and

a step (c) of detecting states of the channel signal, a power of the channel signal, a maximum ghost power, and a signal vs. noise ratio and then changing

a pattern of the antenna in accordance with the detected values.

20. (Original) The method of claim 19, the step (a) comprising:

a step of initializing the antenna controller and detecting whether a channel signal exists through the antenna;

a step of storing an effective power of the channel signal in the memory with the very antenna pattern wherein the channel signal is detected by rotating a directionality of the antenna to a predetermined angle when the channel signal is detected; and

a step of selecting an antenna pattern, when a maximum signal power is

detected, as an optimal pattern.

21. (Currently Amended) The method of claim ~~1~~ 20, wherein the predetermined angle is 360°.

22. (Original) The method of claim 19, the step (c) comprising:

a step of detecting states of the tuned channel signal, a power of the channel signal, a maximum ghost power, and a signal vs. noise ratio in the present antenna pattern through the antenna controller;

a step of judging whether the detected values maintain effective sizes;

a step of changing the antenna pattern in order of the aligned and stored antenna patterns if the present antenna pattern needs to be changed in accordance with a result of the judging step; and

a step of carrying out the step (a) again using the antenna controller to attain an effective antenna pattern if there is no effective one in the entire antenna patterns stored in the memory.